portionately greater than one would expect from the extent of the complicating visceral involvement, and once the suspicion of an underlying typhoid infection is engendered, the diagnosis is comparatively easy.

Pneumo-typhoid is, however, closely imitated by acute tubercular broncho-pneumonia. As aids in distinguishing these we would recall: The higher leukocytosis in tubercular pneumonia; the fact that a typhoid pneumonia is usually basal, the tubercular variety apical; and that daily examination of the sputum will finally demonstrate in the last named disease the presence of the tubercle bacillus.

Chronic tuberculosis and starvation may clinically imitate apyretic typhoid fever. In two cases that the writer has seen, the presence of rose spots, Diazo and Widal reaction served to establish the diagnosis of the latter. Finally there are a series of diseases which till recently have everywhere been grouped under typhoid fever. They appear to be infections caused by the para-typhoid bacillus alpha and the para-typhoid bacillus beta; the colon bacilli, or by various combinations of these germs with or without Eberth's bacillus. Their differentiation is only possible by culture methods or through their respective serum reactions. The marketing of a fluid diagnosticum for each subgroup, similar to Ficker's for typhoid fever, would render generally available a simple method of diagnosis, and such we may confidently expect, for this has already been done for one of the para-typhoid strains.

Two cases illustrating the difficulties of diagnosis:

Case 1.—A. B., aged 26; previously healthy; was admitted to hospital with a history of four days' sickness commencing with malaise and headache. Examination showed a dried furred tongue; a dull expression of face; temperature 103; pulse 100; regular and dicrotic; respirations, 20 to 30. The abdomen was very rigid; the skin hyperesthetic, but there was no marked distension or deep tenderness. The leukocytes were 12,000, the polynuclears being 80 per cent. A Diazo reaction was present in the urine. The Ficker reaction was negative. The spleen and liver could not be satisfactorily palpated on account of the rigidity. The question arose: Was this an acute intra-abdominal lesion—typhoid fever and an intra-abdominal lesion—typhoid fever and a patch of pneumonia, with consequent abdominal wall rigidity—or central pneumonia alone? Careful examination of the lungs showed on the left lower axillary region a dullness which at first was ascribed to the upper splenic area, but over this there was slight increase of vocal resonance and a slight catch in the inspiration. A diagnosis of a patch of central pneumonia was made, the abdominal rigidity thus being explained. But this alone would not satisfactorily account for the pulse temperature ratio, and the positive Diazo reaction; moreover, in an uncomplicated case of central pneumonia in a previously strong individual, a higher leukocytosis should have been expected. Therefore we believed we had to do with a case of typhoid fever in which a patch of pneumonia had occurred, the latter causing the abdominal rigidity. The future history of the case demonstrated the correctness of this diagnosis.

Case 2.—B. C.; aged 20; had had double apical tuberculosis with consequent apical dullness, etc.; began to suffer from breathlessness on exertion. Examination revealed, in addition to the old tubercular trouble, anemia-hemoglobin, 60 per cent, and a dilated heart. While under treatment for this he developed headache and fever. The fever rose in a typical typhoid manner to from 104 to 105°. The pulse (patient taking strychnine) regular, but not dicrotic, varied from 110 to 120. Respirations from 28 to 38, but there was no dyspnea or cyanosis. There was a slight cough. The sparse sputum contained no demonstrable tubercle bacilli. The spleen was slightly enlarged. The leukocytes numbered 5,500 per c. m. m. (polymorphonuclears, 60 per cent; mononuclears, 40 per cent). The tongue was moist. Marked sweating was present. Faint bronchitic rales were audible over the chest, and there was a patch of pneumonic consolidation in the right interscapular region. A marked Diazo reaction was present, and finally a few atypical rose spots developed in the abdomen. No Widal or Ficker. The eye-grounds were normal. The differential diagnosis of this case lay between typhoid fever and acute miliary tuberculosis. In favor of the latter there was a known primary focus; the slightly hurried pulse and respiration rate; the marked sweating; the moist tongue; the right interscapular dullness. The bronchitic rales; the Diazo reaction; the slight splenic enlargement, and the atypical rose spots could not be made use of for they might occur in either affection. In favor of typhoid fever there was the typical temperature ascent—its nonremittent character; the leukopenia with the excess of mononuclear forms, and the absence of dyspnea and cyanosis; whilst many of the features recorded as being in favor of acute miliary tuberculosis could be partially ascribed to the patient's previously debilitated condition. Consequently, we favored a diagnosis of typhoid fever, but from a prognostic standpoint, reserved our final decision till the Ficker reaction appeared and the lung symptoms abated.

THE ROUTINE TREATMENT AND COMPLICATIONS OF TYPHOID FEVER.*

By RAY LYMAN WILBUR, M. D., Stanford University.

TYPHOID fever is such a variable disease in its manifestations in different epidemics, in different individuals, and at different ages, that to lay down definite rules for its treatment is impossible. The best that we can hope to do in such a paper as this is to present a general plan which is applicable to a considerable number of the cases that come under observation; but one must remember constantly that in no other disease does the personal equation of the patient count for more than in typhoid. The care of such a case involves not only a study of the condition of all the organs of the patient, but also of his surroundings, his past habits of eating and living, and his former illnesses. It is particularly important to ascertain as early in the disease as possible all the weak points of the patient, so as to begin early to bolster up unsound organs or to endeavor to relieve them of undue strain in their struggle against the typhoid toxins or in their efforts of digestion, excretion or general metabolism. One should at once brush aside the idea that he is dealing purely with an intestinal condition and remember that we have a general infection which is producing degenerative changes in practically all of the more important and more active cells of the body and that it is our duty to consider all of these cells rather than to chase that will-of-the-wisp, intestinal antisepsis. Not that some control over fermentation within the alimentary canal may not be most desirable and important particularly in aiding nutrition and in the regulation of the size of the lumen of the bowel, but that the paying of too much attention to this point may lead one astray and cause the inauguration of a line of treatment detrimental to the best interests of the body as a whole.

The first great question in the selection of a treatment for a given case of typhoid fever is, are we justified in neglecting serum treatment and the so-called specific treatments of various sorts and in the adoption of a plan which practically amounts to a symptomatic treatment alone? I think that we are. With our accurate bacteriological knowledge of this disease and the magnificent results obtained with the antitoxin treatment of diphtheria we naturally look to a serum treatment of typhoid. Such a treatment will undoubtedly come in time and along with it a more satisfactory prophylactic measure than the present one of Wright and then we will be in a position to cope successfully in our backward fight against the ingestion of our own excreta. Certainly at present our vaunted civilization is a sorry structure, when we daily pass through the alimentary canals of hundreds of thousands of our citizens, organisms derived from the discharges of their neighbors.

The nearest approach to a satisfactory serum is that of Chantemesse who reports on 765 cases showing a 5% mortality. The adoption by him of hydrotherapeutic and other most satisfactory measures for the treatment of the disease along with his personal care of the cases reduces the apparent brilliancy of the results as compared to the other Parisian hospitals. Besides, the results from the use of this serum in the hands of others yielded a mortality of 8.7%. Certainly his results are not of such a striking character at present as to impel one to adopt his treatment and I think I am safe in saying that the use of any serum available would be a pure experiment. As regards the various so-called specific remedies widely advertised and often strongly endorsed, it seems to me that it is a much safer plan to protect the organs of our typhoid patients, already busy with as much or more than they can handle, from the necessity of unravelling their often complicated chemical formulæ and turn the task over to the advertising departments of our medical journals where it more properly belongs. A considerable percentage of ty-

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phoid patients, and all of those in some of the milder epidemics, will get well anyhow with ordinary care in spite of the drugs used, and hence comes the marvellous results obtained from some agents. While the so-called specific mercurial treatment so much lauded by some may work well in some epidemics and with mild cases, I am satisfied that in severer forms of the disease, particularly the hemorrhagic, its systematic use is attended with greater dangers than we have any right to assume.

The most advisable plan for the treatment of a given case is the adoption of proper dietetic, hydrotherapeutic, and symptomatic measures. These, when carefully used, combined with absolute rest, and under the control of a good nurse, who has at her command facilities and orders for all ordinary emergencies will not only give a low mortality rate, but will shorten the time spent in bed as well as add to the patient's comfort. After the patient has been put in a good bed, in a well ventilated sunny room, and a competent nurse has been installed the first duty of the physician is not only to provide careful written directions for all that is to be done, including the method of sterilization of discharges, and the signs and symptoms of the ordinary complications with their first treatment, but also to see that there are at hand the emergency drugs and supplies, including a simple saline infusion outfit, that may be needed. This involves a certain amount of expense, but in the long run will save time and life.

Food.—The selection of a proper food should not be according to rote; but, after getting some idea of the patient's ordinary gastrointestinal condition, an effort should be made to select some form of milk food that seems most likely to be well borne. There need be no great hurry as no food at the onset seems often to be an advantage and this fact has led to the so-called starvation treatment which when carried too far is absurd. The physician who understands the modification of milk for infants and who will adopt similar plans in preparing milk for typhoid patients will have very little to say against milk as a food in typhoid. One must consider in selecting a food not only the diminished digestive activity of the stomach and bowel, the intestinal ulcers, but also the parenchymatous degeneration of the liver with its disturbed metabolisms, the condition of the heart muscle, particularly as regards the nutrition it requires, and also the probability of a nephritis occurring during the course of the disease. For all these conditions milk, if properly modified and slowly given, is the best food.

Regular inspection of the stools for undigested fat particles and curds combined with careful observation of the tongue and abdomen is of importance. The amount and interval of feedings should depend entirely upon the condition of the patient and his ability to digest food. To pour the same quantity of food of the same strength through the torrid parched mouth of a patient with a coma vigil as one would use the week before such a condition occurs is bad practice. The modification of the food should go hand in hand with the changes in the patient's condition. The addition to the milk of lime water, Vichy water, Shasta water, soda solution, or ordinary water or the peptonization or modification of the milk with the prepared farinaceous foods, the use of junket, whey, buttermilk, toast milk, celery milk, onion milk, whiskey and milk, coffee and milk, tea and milk, may all be used. Cocoa and chocolate are sometimes well borne, but are usually too taxing for the impaired digestion of the typhoid patient.

The use of large amounts of broths during the course of the disease, to the exclusion of other foods is pernicious not only from the standpoint of the stomach—as witness the dilated stomach often seen after typhoid—but also from that of the kidney with its present or impending nephritis. Broth occasionally is of service if well strained and properly made, and while its nutritive value is not great, the contained gelatine is of some service and can be augmented by the addition of commercial gelatine. As regards the use of other foods the conservative plan is surely the safer. One who follows up a number of typhoid patients for a couple of years after recovery and sees how many of them have had difficulty in reestablishing a normal state of the gastrointestinal tract is particularly struck by this. The use of eggs, toast, gruels, or other soft foods may do well in a certain percentage of cases, but can do great harm in others, and their use is always attended with risk, and is very seldom necessary if proper care is exercised in watching the milk digestion. When milk will do well why should one compel any patient to run a greater risk by the administration of other foods? When possible it is best to continue the use of milk foods not only up to the end of 10 days after the fever has disappeared but to make milk the basis of the diet for some time afterwards.

After the milk, broths, junket, ice cream, gelatine, and gruels which may be gradually added to the diet, comes toast, eggs, well cooked rice, and mush, then a chop and a gradual return to the 3 simple meals a day. But the food of these meals should be regulated for some months not only with the reference to the possibility of a late perforation, but also to protect the gastrointestinal tract from greasy, fried foods, pastry, made dishes, hashes, nuts, dried or preserved fruits, etc. Only in this way can one hope to get a prompt return of good digestion and satisfactory nourishment.

Water.—Hand in hand with the feeding of the patient should go the administration of water, preferably plain, but some simple alkaline water such as Vichy if the urine is irritating. An effort should be made to give the water before the feedings and to keep track of the amount. Some patients will stand very large quantities and show a beneficial effect from its use. Its administration is logical and should be consistent. The addition of grape juice, weak tea or coffee to it will often make it more palatable and beneficial particularly if the kidneys are inactive.

Hydrotherapeutic measures.—The simplest method for the reduction of the temperature is the combination of the abdominal coil and head ice-cap with sponge baths either cool, cold, or ice cold. While it is true that the benefit derived from the use of the coil is probably purely that of reducing the temperature, except perhaps in controlling the circulation of the abdomen, and not at all tonic or stimulating, as are the sponge baths, the combination of the two is most effective. Not only is one able to keep the temperature constantly from three-fourths of a degree to one and a half degrees lower than otherwise but the sponges come less frequently and do not tax the patient so much. The coil should be kept on constantly, except perhaps for a short time in the morning, whenever the temperature is over 100° F. When the temperature is high it can be re-enforced with a second coil or a superimposed ice-cap. If the temperature rises over 102.5° or 103°, a tepid sponge should be given; if still higher a cold or ice cold sponge bath. If then the temperature is not affected, and the nervous symptoms are great, an ice pack or a sheet wrung out of ice water applied with fairly vigorous rubbing of the trunk and limbs are best used. Occasionally the coil is not well borne, particularly by fat, weak or anemic individuals and its use should then be only partial or completely discontinued. In some cases even the sponging seems to do harm and to lead to continued cyanosis and chills. Such patients do better without the use of cold at all, and one for comfort need only remember the countless people alive today who have gone through typhoid, not only without water externally but frequently with almost none at all internally.

While the system of tub baths does admirably for hospital routine and while its mortality results have been satisfactory, I do not feel that such baths need be introduced in the care of private patients, partic-

ularly where attentive nurses are at hand. Their use in many cases seems to me needlessly severe. The amount of shock is out of proportion to the good accomplished and the amount of movement required is a great objection where there is any liability of hemorrhage and perforation—and such liability is present in most cases of typhoid. There is a wide difference in the susceptibility of individuals to hydrotherapeutic measures, and because such satisfactory results have been obtained by tub-baths does not mean that each individual must be put through that routine in order to better his chances of coming out alive from the disease. The general point it seems to me is the adaptation of hydrotherapeutic procedures as well as the diet to the individual, rather than to try to force our patients through an inflexible treatment in the hope that all but 6 or 7 in a hundred will escape with their lives.

Medical treatment.—Every drug used in a case of typhoid fever should have its action on the various organs of the body carefully analyzed. One should ask himself such questions as "Will the benefit derived from this hypnotic powder be greater than the possible depression of the heart action"; "Will this drug have a favorable enough action on the fermentation within the bowel so that we can neglect its possible irritating effect on the kidney?" In other words one must know as well as he can the state of the various organs of the body, and the action of the drug given upon each, before indiscriminately using the first thing that seems apt to allay the symptom most troublesome for the time being. In the routine treatment of this disease there is no drug to be used throughout the course of the illness which has been demonstrated to be uniformly useful and harmless. Recently Caiger in the London Bradshaw lectures has made special claims for oil of cinnamon and Cannoday in this country for bisulphate of sodium. Similar claims have been urged for a host of other products, prominent among them oil of eucalyptus, turpentine, sulphurous acid, and acetozone but we are safe in discarding all of these and either giving no routine drug or selecting some simple form of treatment perhaps including some of the above agents which we can change from time to time as seems best.

Intestinal antiseptics are often beneficial in allaying undue fermentation in the bowel and any of the ordinary ones may be used provided the kidney is carefully watched. Salol and guaiacol carbonate 1½ grains each every 3 or 4 hours has often been of service to me particularly early in the disease. Oil of turpentine in emulsion in small doses, frequently repeated often works wonders where the tongue is dry, the abdomen distended, and the patient in a profound toxemic state. It is particularly serviceable after hemorrhage from the bowel and in tympanitic conditions when combined with hot turpentine stupes externally and the rectal gas tube; but the kidney and bladder need to be watched.

The various antipyretic drugs should be used very sparingly if at all in typhoid fever. Their administration is usually needless, dangerous, and if long continued almost criminal. One can have no idea in typhoid fever what strain will be thrown upon the heart in the days or weeks to come and should not mortgage the future by the use of depressant remedies. In this connection I might note that I am impressed more and more with the desirability of greater care in the selection of drugs for the treatment of the earliest symptoms of typhoid. One must think of typhoid as a possibility in all cases of headache, indigestion, etc., particularly with associated fever, and until the case becomes clearer not undermine the future of the patient with large doses of depressant drugs. While one may escape quite happily in mild cases from the usual routine of severe cathartics, coal tar products, quinine and mixed diet, with only limited restriction of activity, that is apt to prevail the first week of the disease, seldom can one fail to see the detrimental effect of such treatment in severer cases. My point is, that where typhoid fever is at all a likely diagnosis it is desirable to resist the temptation to relieve the patient's symptoms at the probable expense of the future; particularly is this true of the often severe headache that inaugurates the disease. Rest, soft food, external applications and the understanding cooperation of the patient will lead to prompter diagnoses and more satisfactory outcomes than helter-skelter treatment with its uncertainties of temperature and masked symptoms.

Stimulants are frequently required in typhoid fever and should be carefully selected. The question of the use of alcohol comes at once to the fore. In many cases it is most helpful particularly where there is inability to give enough food or where pneumonia is present and where the state of the kidney permits its use. Two to 6 ounces daily will do no harm for a short while if a stimulant is indicated and one can readily discard it if it produces untoward results or is ineffective. Far more reliable for routine use is strychnine which can be given in fairly large doses without harmful effects. It is better administered in small doses frequently repeated rather than in larger doses far apart. The point made by Cabot against strychnine and alcohol that they do not raise the blood pressure as much as a meal does not seem to me conclusive. What is wanted is not necessarily a higher pressure but a more adequate circulation to the various tissues of the body which can readily be brought about by proper interaction of the heart and vasomotor mechanism under the influence of drugs of hydrotherapeutic measures and without necessarily an increase in the blood pressure. The best method of keeping up a waning heart in typhoid is by the alternation of stimulants one every hour or oftener—strychnine, then whiskey, then caffein, then camphor, then strychnine again, etc.—rather than a massive dose after a long delay, for then the stimulant causes a sharp flogging of the jaded heart muscle rather than the constant steady persuasion of alternate doses.

(Digitaline in doses of one-fiftieth to one-hundredth grains is often of service when combined with other stimulants, particularly when the pulse is weak and fast. Caffein citrate either in powder or as black coffee is useful, particularly late in the disease, and the results from its use when administered hypodermatically in hot solution are often striking.)

Nitroglycerine combined with strychnine or other stimulants is particularly serviceable when administered in solution upon the tongue, but its vasodilator effect should be kept in mind when hemorrhages are likely. For marked circulatory disturbances particularly collapses, camphorated oil 10%, m xxv, ether and oil āā m xxv, tincture musk 15 minims, brandy m L epinephrin 1-1000, 25 m hypo or aseptic ergot xxx minims, may all be used hypodermatically in alternation at intervals or in rapid succession in desperate cases.

Next to stimulation in importance comes the regulation of the bowels. For constipation calomel in divided doses is often of great service but I have seen hemorrhage immediately following its use during the third week. The simplest and best measure is the administration of milk of magnesia or a saturated solution of epsom salts in small frequently repeated doses. Vegetable cathartics should not be used except during convalescence. Enemas should be small in amount given low and used with great care. An ounce of glycerin in 4 ounces of water is most effective and can be used with safety after the arrest of peristalis induced by the treatment of hemorrhage. The addition of turpentin, soap, salt, or the use of oil may sometimes be necessary, but the local effect upon the probable colonic ulcers both from the quantity and quality of the enemas should be constantly kept in mind. The use of saline enemas for absorption or in case of nephritis, hemorrhage, etc., should be carefully guarded and not too frequently repeated in order to avoid overdistension. Suppositories are often safer than enemas. As a rule it is wiser to open the bowels

each day in most cases, although in some every other day is often enough.

For diarrhea starch and opium enemas are usually sufficient and effective.

Sedatives.—Heroin hydrochlorid given hyperdermatically one twenty-fourth to one-twelfth grain is a very useful sedative and, as it interferes but slightly with the bowels and rarely causes vomiting, it may be used repeatedly. Hyoscine hydrobromate one two-hundredth to one one-hundredth grains hypodermatically will frequently quiet marked nervous excitability and delirium. Morphine is objectionable and not as effective as a grain of powdered opium by mouth. Occasionally when the heart permits one can use, with satisfaction, particularly during the recovery stage, veronal, chloretone, bromides or chloral by mouth or preferably in mucilaginous enemata. During the height of the fever hydrotherapeutic measures excel drugs in sedative effect.

Diuretics.—Water, small normal saline enemas and grape juice are the simplest and best diuretics. Occasionally when there is marked pain on urination with burning scanty urine alkaline mixtures or hexamethylene-tetramin is helpful.

The management of convalescents is often as difficult as it is important. Careful attention to details of food, rest, exercise, the amount of reading, emotional disturbances, etc., will aid in a prompter return to normal health. Often one can establish the individual upon a saner and more hygienic basis of living. Of importance is the control of exercise in order that there may be no undue strain upon the weakened heart muscle. The resumption of ordinary duties too soon after the illness is often detrimental to future health. Emotional disturbances are often harmful, and a mental shock may bring on a relapse.

Complications.—The so-called complications of typhoid are of such common occurrence that one is justified in expecting them in every case, and in preparing emergency measures for their treatment. In the 88 cases that have come directly under my observation there have been 11 cases of severe intestinal hemorrhage, 4 cases of perforation, 9 cases of abscess of submaxillary gland, elbow joint or elsewhere in the body, 6 pneumonia, 19 circulatory collapses, 20 marked nervous symptoms, subsultus tendinum, marked delirium, and coma vigil, 6 endocarditis, 3 periostitis, 1 false membrane in throat, 5 venous thrombosis of femoral vein, 1 acute infection of the gall-bladder, 1 post-typhoid insanity, and a considerable number of cases of nephritis and cystitis of varying degrees of severity.

It is true that most of these cases were seen during a severe epidemic, and were probably of the so-called mixed-infection type, as witness the number of cases of endocarditis and abscess formation. Many of these cases were hemorrhagic in character, and had not only repeated intestinal hemorrhages, but in some cases severe epistaxis, hematemesis (with acute congestive inflammation of the gastric mucous membrane, but without ulcer, as shown at autopsy), and bleeding from the uterus, bladder or kidney. Of these 88 patients, 6 died—2 of perforation, 2 of repeated hemorrhages and 2 at the end of about 6 weeks from endocarditis with embolism, and with marked degeneration of the heart muscle and liver.

Perforation is a most serious event in typhoid, and demands at once the best of care, medical or surgical. There is a tendency at present to think only of the operative treatment of this complication, based on the brilliant results obtained under the best possible hospital conditions, but in any given case, particularly outside of the hospital, one must weigh all points carefully before deciding on such a step. One must be sure of the patient's condition, operate at once, and be provided with means to meet the most difficult kind of abdominal work. Undue manipulation of the bowel, a little mixed infection, the inability to properly suture the diseased intestine, may all have grave consequences. Of course the risk of operating for perforation during convalescence is much reduced. Of the 4, possibly 5, cases of perforation that came under my observation, none of the patients were operated upon; 2 died, 1 of a second perforation high up in the ileum several days subsequent to the first perforation in the cecal region. It is to be hoped that all cases of operation for perforation will be reported, instead of, as is often the case, only those that turn out well. *Severe hemorrhage* is only second to perforation in seriousness as a complication in typhoid. In all the fatal cases in my series, the patients had hemorrhages at some time during their illness. Very moderate bleeding is often of no great consequence, and demands no treatment aside from caution in feeding. It is probably to this fact that we owe the numerous measures lauded as so useful for hemorrhage. The use of epinephrin for this condition has lately been much before the medical public. I think that there are grave objections to its administration, and that its value is yet to be proved. I have seen it fail absolutely in 2 desperate cases of hemorrhage.

Collapse. Collapse is a complication that if promptly met with strong stimulative procedure need not be a prominent factor in causing mortality.

Nephritis. Nephritis as a complication is often neglected in typhoid. Too often in many of the profound cases the symptoms of uremia are grafted onto the typhoid picture and no attention is paid to them. Careful measurements of the urine, and microscopical examinations, will make the situation clear. Curschmann of Leipsic has made a study of the matter, and reports that one-half of the patients having severe nephritis die.

Myocarditis in greater or less degree must be dealt with in every case of typhoid. It is to be particularly thought of during convalescence and in patients that do not regain their former health after the illness. Rapid heart action is of common occurrence during the resumption of ordinary movements after typhoid, but when the heart rate remains constantly high, or it requires a prolonged rest for the heart to return to normal after moderate exercise, great care is necessary. Recently considerable attention has been called to this disease as a prominent factor in the production of early arteriosclerosis, and there is much to bear out the harmful influence of the typhoid toxins on the blood vessels of the body.

These last 3 conditions—nephritis, myocarditis and arteriosclerosis—should be kept in mind in each case, so that when we discharge our typhoid patient, he may not only have been safely carried through the critical stage of his disease, but also left with as few scars as possible to mar his future health.

SURGERY (IMMEDIATE) OF PERFORATED TYPHOID ULCER, WITH REPORT OF CASE.*

By F. E. C. MATTISON, M. D., Pasadena.

WHEN your chairman requested me to prepare a 10-minute paper on the above subject, being a part of the symposium on typhoid fever, it seemed to me that it might be an easy task, but I find that to condense the topic sufficiently to come within my time limit may spoil what little I have to say. I have to acknowledge my indebtedness to the works of Kean, Cushing, Haggard, Van Hook and many others, as I shall quote very freely from them.

Historical notes.—Since the masterly resumé on the subject in 1888 by Kean (Surgical Complications and Sequels of Typhoid Fever), in which he states that Leyden, in 1884, was the first who suggested that a perforated typhoid ulcer should be treated surgically, much has been written upon this subject, and I shall merely touch upon a few facts. In the same year Mikulitz reported 3 cases of peritonitis which he had treated surgically, one of these being a case of perforation in typhoid fever. Prof. James C. Wil-

*Read at the Thirty-fifth Annual Meeting of the State Society, Riverside, April, 1905.